western Korea, where it probably filled up gradually on the 17th.

The approximate positions of the center at 6 a. m. of July 11 to 16 were as follows:

July 11, 6 a. m. 123° 05′ longitude E., 19° 15′ latitude N.
July 12, 6 a. m. 122° 20′ longitude E., 21° 45′ latitude N.
July 13, 6 a. m. 121° 30′ longitude E., 25° 30′ latitude N.
July 14, 6 a. m. 119° 00′ longitude E., 27° 00′ latitude N.
July 15, 6 a. m. 117° 30′ longitude E., 33° 20′ latitude N.
July 16, 6 a. m. 122° 20′ longitude E., 40° 30′ latitude N.

The Korea typhoon, July 18 and 19.—The first part of this typhoon is also indefinite owing to lack of observations from the Pacific between Guam and the Philippines. It seems probable, however, that after moving west-northwest for some days, it recurved to north and north-northeast on the 15th about 200 miles to the east of Balintang Channel. The center was situated at 6 a. m. of the 16th about 150 miles to the south of Naha, Loochoo Islands. From that time it moved practically northward until it probably filled up on the 20th over Manchuria.

The storm was severely felt in southwestern Japan and Korea. The following information was given by the United Press:

SEOUL, KOREA, July 21.—Figures compiled here to-day showed how great was the force of the typhoon which last week devastated wide areas in Kyushiu and Korea.

The dead are officially listed as numbering 349.

Injured persons total 201 while 1,386 persons are listed as missing.

No less than 7,812 houses have been destroyed. There are 35,220 homes and buildings flooded.

It is feared that the extent of the storm damage will prove to be even greater as additional reports are received through Government channels.

Several steamships which reported themselves in distress during the typhoon have not been heard from. It is feared they may have foundered. Large numbers of vessels in the fishing fleets are listed as lost.

The steamer *Aki Maru* was very near the center in 128° 20′ longitude E. and 31° 45′ latitude N; she reported a barometric minimum as low as 27.97 inches (710.4 mm.) at 2:55 a. m. of the 18th and hurricane winds from the north and northwest quadrants.

A Luzon typhoon, July 22 and 23.—This typhoon seems to have formed very far over the Pacific near 150° longitude E, and 12° or 13° latitude N., although lack of observations between Guam and the Philippines prevent us from giving as certain the track of this typhoon until it was clearly shown on our weather map for 2 p. m. of the 21st in about 128° longitude E. and near 15° latitude N. moving west by north. The center reached Luzon and passed about 60 miles to the north of Manila during the night of July 22–23. Once in the China Sea the typhoon moved northwestward, and reached the China coast to the west of Hong Kong in the evening of the 24th.

The steamers *Silverguava*, *Tjisondari*, *Taiping*, and *Aki Maru* were much involved in this typhoon on the 23d and 24th to the west of central and northern Luzon.

The lowest barometric minimum reported by our stations was that of Baler; it was 29.32 inches (744.65 mm.) at 10 p. m. of the 22d with winds from southeast, force 8.

The approximate positions of the center at 6 a. m. of July 22 to 25 were as follows:

July 22, 6 a. m. 125° 00′ longitude E, 15° 25′ latitude N.
July 23, 6 a. m. 119° 05′ longitude E, 16° 15′ latitude N.
July 24, 6 a. m. 116° 00′ longitude E, 19° 05′ latitude N.
July 25, 6 a. m. 110° 00′ longitude E, 23° 40′ latitude N.

The Loochoos typhoon, July 24 to 29.—This severe typhoon was probably formed on the 24th to the south of the Bonins near 143° longitude E. 20° or 21° latitude N. It moved west-northwest until it reached Naha, when it took a due west direction toward China. The barometric reading at Naha at noon of the 27th was as low as 28.31 inches (719 mm.), the winds blowing with hurricane force from the north quadrant.

The U. S. S. *Barker* was well under the influence of this typhoon over the Formosa Channel on the 29th.

The approximate positions of the center at 6 a. m. of July 24 to 29 were:

July 24, 6 a. m. 143° 20′ longitude E, 20° 30′ latitude N.
July 25, 6 a. m. 137° 00′ longitude E, 22° 50′ latitude N.
July 26, 6 a. m. 131° 30′ longitude E, 24° 15′ latitude N.
July 27, 6 a. m. 127° 45′ longitude E, 25° 35′ latitude N.
July 28, 6 a. m. 123° 15′ longitude E, 25° 55′ latitude N.
July 29, 6 a. m. 118° 50′ longitude E, 26° 00′ latitude N.

A very distant Pacific typhoon, July 24 to 30.—This typhoon was of no importance for the Philippines. It probably formed on the 24th to the east of Guam, and on the 25th and 26th it recurved gradually to the north and northeast. The center passed not far east of the Bonins in the afternoon of the 29th.

TWO SEVERE TYPHOONS OVER THE PACIFIC IN AUGUST, 1930

By Rev. José CORONAS, S. J.

[Weather Bureau, Manila, P. I.]

There has been no typhoon over the Philippines during this month of August. And even over the Pacific there have been only two very severe typhoons. One over the Loochoos and southwestern Japan and another over the Bonins.

The typhoon of the Loochoos and southwestern Japan; August 5 to 14.—The place of origin of this typhoon is still uncertain owing to lack of sufficient observations up to the present. The center seems to have remained almost stationary on the 5th and the morning of the 6th to the north-northwest of Guam in about 144° longitude E and 15° latitude N. After 2 p. m. of the 6th and during the 7th and 8th it moved northwest by west; on the 9th it inclined decidedly to the north; on the 10th to 13th it kept an almost due north direction; finally it recurved northeastward on the 13th in the neighborhood of Korea. The lowest barometric reading reported was 28.27 inches (718 mm.) at 6 a. m. of the 11th from the station of Oshima in the northern part of the Loochoo Islands.

The approximate positions of the center at 6 a. m. of August 5th and 6th, 7th, 8th, 9th, 10th, 11th, 12th and 14th are as follows; the position at 6 a. m. of the 13th is omitted as somewhat doubtful owing to lack of observations:

August 5 and 6, 6 a. m. 143° 55′ longitude E, 15° 10′ latitude N.
August 7, 6 a. m. 140° 15′ longitude E, 17° 45′ latitude N.
August 8, 6 a. m. 136° 05′ longitude E, 20° 30′ latitude N.
August 9, 6 a. m. 130° 50′ longitude E, 24° 30′ latitude N.
August 10, 6 a. m. 129° 30′ longitude E, 26° 35′ latitude N.
August 11, 6 a. m. 129° 30′ longitude E, 28° 35′ latitude N.
August 12, 6 a. m. 129° 30′ longitude E, 31° 20′ latitude N.
August 14, 6 a. m. 132° 20′ longitude E, 41° 15′ latitude N.

The Bonins typhoon, August 16 to 18.—Lack of sufficient weather reports prevents us from giving the track of this typhoon prior to the 16th. At 6 a. m. of the 16th the center of a severe typhoon was shown in our weather map to the southwest of the Bonins in about 23° latitude N., between 137° and 138° longitude E. It moved northeast on the 16th, and north-northeast on the 17th passing close to the Bonin Islands in the morning of the 17th, the barometric reading there at 6 a. m. having been

much lower than 28.74 inches (730 mm.), although we can not give the exact figures owing to a possible error in the telegraphic transmission. The barometric reading reported at noon was still as low as 28.70 inches (729 mm.) (gravity correction applied).

The approximate positions of the center at 6 a. m. of the 16th, 17th, and 18th were as follows:

August 16, 6 a. m. 137° 30′ longitude E, 22° 45′ latitude N.
August 17, 6 a. m. 141° 30′ longitude E, 26° 40′ latitude N.
August 18, 6 a. m. 144° 15′ longitude E, 30° 55′ latitude N.

CLIMATOLOGICAL TABLES

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatologicl service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, August, 1930

[For description of tables and charts, see REVIEW, January, 1930, p. 37]

Section	Temperature								Precipitation					
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount
	°F.	°F.		°F.			F°.		In.	In.		In.		In.
Alabama	79.5	−0.1	2 stations	108	17	Valley Head	50	124	3.50	−1.04	Prattville	9.48	Tallassee	1.57
Arizona	79.4	−0.3	do	116	27	Williams	35	19	2.21	+0.07	Snowflake	6.35	2 stations	0.00
Arkansas	81.8	+2.1	do	114	9	Dutton	46	26	2.58	−1.11	Searcy	7.93	Blytheville	0.23
California	71.0	−1.1	Greenland Ranch	118	11	Portola	25	20	0.08	−0.02	Palm Springs	2.03	128 stations	0.00
Colorado	65.8	+0.7	Lamar	104	3	Hermit	26	31	3.14	+1.18	Cope	9.74	Fruita	0.33
Florida	80.6	−0.8	Blountstown	103	4	Penney Farms	55	25	4.34	−2.68	Moore Haven	11.61	Fernandina	0.35
Georgia	78.6	−0.8	Tallapoosa	105	6	Clayton	44	123	1.90	−3.32	Waycross	4.50	Savannah (No. 2)	0.13
Idaho	68.5	+2.3	Orofino	111	8	Stibnite	22	30	1.30	+0.58	Malad	5.40	St. Maries	0.00
Illinois	76.2	+2.0	2 stations	113	9	Danville	45	11	1.96	−1.50	Aledo	8.55	Chester	0.10
Indiana	74.4	+1.1	6 stations	108	17	2 stations	40	112	2.07	−1.24	Huntington	5.71	Albion	0.87
Iowa	74.4	+2.7	Sac City	113	3	3 stations	41	111	2.42	−1.02	Storm Lake	6.71	Washta	0.48
Kansas	79.7	+2.3	4 stations	114	13	Atwood	51	26	2.81	−0.24	Plainville	8.91	Coldwater	0.40
Kentucky	76.5	+0.9	St. John	113	15	Farmers	42	12	2.25	−1.48	Flemingsburg	5.40	Murray	0.32
Louisiana	81.8	+0.1	Dodson	108	15	St. Joseph	53	22	4.63	−0.56	Delta Farms	14.72	Dodson	0.45
Maryland-Delaware	73.8	+0.5	Keedysville, Md	108	4	Oakland, Md	30	12	1.12	−3.15	Millington, Md	3.33	Ferry Landing, Md.	0.15
Michigan	68.6	+2.1	Monroe	102	2	2 stations	28	111	0.75	−2.07	Owosso	2.20	Alcona	0.05
Minnesota	70.8	+4.3	Fairmont	109	3	Meadowlands	33	110	1.09	−2.11	Waseca	4.50	Big Falls	0.15
Mississippi	81.0	+0.4	Corinth	110	8	Fayette	52	22	3.22	−1.14	Pearlington	8.60	Greenville	0.13
Missouri	78.5	+2.5	2 stations	114	9	Steffenville	47	11	2.02	−1.73	Maryville	4.81	Valley Park	0.04
Montana	68.7	+4.2	Trout Creek	105	9	Philipsburg	24	31	1.02	−0.11	Hebgen Dam	4.40	Melstone	0.11
Nebraska	74.6	+1.7	2 stations	113	3	Ainsworth	44	29	4.15	+1.33	Fairmont	10.64	Springview	1.17
Nevada	70.5	−0.1	Logandale	111	6	Zora Vista Ranch	25	20	0.80	+0.36	Arthur	2.93	Mina	0.00
New England	66.2	−0.6	2 stations	100	3	Bloomfield, Vt	32	14	2.54	−1.33	Van Buren, Me	6.14	Hardwick, Mass	0.85
New Jersey	71.1	−0.7	do	101	13	Layton	34	13	3.32	−1.61	Woodcliff Lake	5.58	Cape May City	1.92
New Mexico	70.4	+0.6	do	107	14	Therma	31	20	2.15	−0.34	Cloverdale	5.74	Newman	0.21
New York	67.4	+0.1	Addison	103	8	Allegany State Park	32	112	2.41	−1.41	South Edwards	5.38	Elmira	0.50
North Carolina	73.9	−1.4	Weldon	105	10	Banners Elk	31	23	2.68	−2.72	Statesville	6.06	Henderson	0.23
North Dakota	70.4	+5.0	2 stations	104	12	Portal	32	31	1.45	−0.83	Ellendale	5.01	Pembina	T.
Ohio	72.0	+0.4	3 stations	107	4	3 stations	38	112	2.35	−1.09	St. Paris	5.32	Put-in-Bay	0.58
Oklahoma	83.8	+2.6	Alva	113	3	2 stations	54	125	1.81	−1.25	Tuskahoma	4.11	Walters	0.21
Oregon	66.7	+1.5	Umatilla	109	17	Sand Creek	23	124	0.22	−0.29	Olive Lake	1.60	15 stations	0.00
Pennsylvania	70.3	+0.3	Carlisle	108	4	Somerset	29	12	1.47	−2.76	Kregar	4.12	Sunbury	0.29
South Carolina	77.5	−1.3	2 stations	103	16	Caesar's Head	46	23	2.42	−3.33	Georgetown	7.66	Trenton	0.29
South Dakota	74.2	+4.3	Wagner	113	2	Hot Springs	42	31	2.80	+0.42	Dowling	8.24	Waters Ranch	0.18
Tennessee	77.4	+1.0	Perryville	113	9	Crossville	43	12	2.61	−1.40	Kingsport	6.11	McKenzie	0.40
Texas	84.1	+1.4	McKinney	114	19	4 stations	53	18	1.51	−1.05	Navasota	6.79	16 stations	0.00
Utah	69.8	+0.3	St. George	104	16	Park City	30	9	2.57	+1.37	Black's Fork (near)	6.70	Bluff	0.34
Virginia	74.2	+0.6	3 stations	107	14	Burkes Garden	36	112	1.75	−2.66	Mendota	5.85	Randolph	0.15
Washington	67.4	+1.9	Wahluke	110	12	3 stations	32	126	0.22	−0.70	Forks	1.64	11 stations	0.00
West Virginia	70.7	−1.1	Moorefield	112	4	2 stations	30	12	2.20	−1.90	Gary	5.07	Upper Tract	0.70
Wisconsin	70.0	+3.1	2 stations	103	3	Big St. Germain Dam.	31	12	1.05	−2.23	Lake Mills	3.18	Downing	0.10
Wyoming	65.3	+1.3	Colony	100	1	Riverside	28	30	3.24	+2.26	Pinebluff	9.44	Ulm	T.
Alaska (July)	55.7	−0.1	Fort Yukon	84	27	Barrow	28	24	2.70	−0.06	Mount Roberts (b)	14.91	Fort Yukon	0.42
Hawaii	76.2	+1.0	Kaanapali	96	121	Waimea	51	16	9.30	+2.03	Piihonua	59.83	2 stations	0.00
Porto Rico	79.8	+0.7	Juana Diaz	101	11	Guineo Reservoir	50	15	4.99	−2.24	Lares	15.95	Santa Isabel	1.41